

## PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

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NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT  
(PCT Rule 71.1)

Date of mailing  
(day/month/year) 29.06.2004

Applicant's or agent's file reference  
W5423TS6632F

## IMPORTANT NOTIFICATION

International application No.  
PCT/EP 03/03172

International filing date (day/month/year)  
24.03.2003

Priority date (day/month/year)  
26.03.2002

Applicant  
KRATON POLYMERS RESEARCH B.V. et al

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international  
preliminary examining authority



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# INTERNATIONAL PRELIMINARY EXAMINATION REPORT



(PCT Article 36 and Rule 70)

Applicant's or agent's file reference W5423TS6632F	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/03172	International filing date (day/month/year) 24.03.2003	Priority date (day/month/year) 26.03.2002
International Patent Classification (IPC) or both national classification and IPC C08F297/04		
Applicant KRATON POLYMERS RESEARCH B.V. et al		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 5 sheets, including this cover sheet.  
  
☒ This report is also accompanied by ANNEXES consisting of sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 60 of the Administrative Instructions under the PCT).  
  
 These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

- |      |                                     |  |
|------|-------------------------------------|--|
| I    | <input checked="" type="checkbox"/> | Basis of the opinion   |
| II   | <input type="checkbox"/>            | Priority   |
| III  | <input checked="" type="checkbox"/> | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability   |
| IV   | <input type="checkbox"/>            | Lack of unity of invention   |
| V    | <input checked="" type="checkbox"/> | Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| VI   | <input type="checkbox"/>            | Certain documents cited  |
| VII  | <input type="checkbox"/>            | Certain defects in the international application   |
| VIII | <input type="checkbox"/>            | Certain observations on the international application  |

Date of submission of the demand  27.10.2003	Date of completion of this report  29.06.2004
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Gold, J  Telephone No. +49 89 2399-8413  

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/EP 03/03172

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-13 as originally filed

**Claims, Numbers**

1-10 received on 30.04.2004 with letter of 23.04.2004

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3)

3. With regard to the **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

5. ☒ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

see separate sheet

6. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/EP 03/03172

**III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 8-10

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☒ the claims, or said claims Nos. 8-10 are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for the said claims Nos.

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the Standard.

☐ the computer readable form has not been furnished or does not comply with the Standard.

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-7
	No: Claims	

Inventive step (IS)	Yes: Claims	1-7
	No: Claims	

Industrial applicability (IA)	Yes: Claims	1-7
	No: Claims	

2. Citations and explanations

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP 03/03172

**Re item I.**

1. Amendments

Amended page 8

Amended page 8, filed with letter dated 23.04.2004, violates Article 34(2)(b) PCT. The introduced text passage p 8/l 15-35 goes beyond the disclosure in the international application as filed.

Thus, according to Rule 70.2(c) the report is established as if such amendments had not been made. For examination page 8 as originally filed is used.

**Re item II.**

1. Amended claims 8-10

Amended claim 8, filed with letter dated 23.04.2004, violates Article 34(2)(b) PCT. The introduced test methods go beyond the disclosure in the international application as filed.

Thus, amended claim 8 and all dependent claims thereof, i.e. claims 9 and 10, are not examined.

**Re item V.**

1. Prior art

In this preliminary examination report the following documents are cited:

D1: US-A-5 777 039 (DUPONT MARTINE JEANNE ET AL) 7 July 1998 (1998-07-07)

D2: US-A-4 792 584 (SHIRAKI TOSHINORI ET AL) 20 December 1988 (1988-12-20)

2. Novelty

The subject-matter of claims 1-7 is novel over the closest prior art document D2 within the sense of Article 33(2) PCT. The distinguishing features are the step I molecular weight between 9000 and 10000 kg/mol and the coupling efficiency (CE) of 50 to 80 %.

3. Inventive step

The problem to be solved is to provide an improved adhesive composition having excellent tack, adhesive strength, creep resistance and treatment capability at

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/EP 03/03172

high temperatures which is superior to the compositions disclosed in the closest prior art D2.

The applicant solves the problem by the distinguishing features.

Neither in D2 as such nor in a combination of D2 with D1 incentives to said solution of the problem are given. Thus the subject-matter of claims 1-7 involves an inventive step within the sense of Article 33(3) PCT.

4. Industrial applicability

Industrial applicability of the invention disclosed in claims 1-7 is given within the sense of Article 33(4) PCT in the field of pressure sensitive articles, adhesives and adhesion tapes.

5. Clarity of claims 1 and 7

Claims 1 and 7 do not define the matter for which protection is sought in a clear and concise way. As a consequence of a formulation comprising the word "about" in said claims it is not possible to distinguish the invention unambiguously from the prior art with respect to novelty and inventive step (Article 6 PCT). This deficiency can be overcome in the regional phase.

6. According to the preliminary examination of the international searching authority the subject-matter claimed in claims 1-7 meets the requirements of Article 33(1) PCT.

C L A I M S

1. Poly(styrene-butadiene-styrene) polymer having a high vinyl content in the butadiene block comprising in combination
- i) a polystyrene content (PSC) within a range of 15-20% by weight
  - 5 ii) a coupling efficiency (CE) of 50-80%
  - iii) a step I molecular weight (MW) between 9,000 and 10,000 kg/mol
  - iv) a vinyl content between about 20-45%, and
  - v) a MFR of equal to or greater than 10.
- 10 2. The polymer according to claim 1 wherein the polystyrene content (PSC) is within a range of 16-19% by weight, preferably 16-18% by weight.
3. The polymer according to claim 1 wherein the coupling efficiency is within a range of 60-75%, preferably 65-70%.
- 15 4. The polymer according to claim 1 wherein the vinyl content amounts to preferably 30-35 by weight.
5. Hot melt adhesive composition comprising:
- a) a poly(styrene-butadiene-styrene) polymer having a high vinyl content in the butadiene block according to any one of
  - 20 claims 1 to 4;
  - b) a tackifying resin;
  - c) optionally a plasticizer; and
  - d) an anti-oxidant.
6. The hot melt adhesive composition according to claim 5
- 25 characterized in that said polymer has the following characteristics
- |                               |                  |
|-------------------------------|------------------|
| Polystyrene (PSC) content (%) | 16-19            |
| CE (%)                        | 60-75            |
| Step I (MW) (kg/mol)          | 9,400-9,600, and |
| 30 Vinyl (%)                  | 25-40.           |

7. The hot melt adhesive composition according to claim 6 characterized in that said polymer has the following characteristics

Polystyrene (PSC) content (%)	about 19
CE (%)	about 70
Step I (MW) (kg/mol)	about 9,500
Vinyl (%)	about 30.

8. The hot melt adhesive composition according to any one of claims 5 to 7 having

- 10 a) hot melt viscosity at 170°C during 24 hours lower than 100 Pa.S (ASTM D3236-78)
- b) Rolling back tack: 1-5 cm (ASTM D3121-73)
- c) Flap test, 500 g weight: higher than 120 minutes (test method herein described)
- 15 d) HP 40°C, 1 kg weight: higher than 50 minutes (ASTM D3654-82).

9. The hot melt adhesive composition according to any one of claims 5 to 9 wherein the amount of tackifier in the composition comprises 50 to 200 parts by weight, preferably

- 20 100 to 150 parts.

10. The hot melt adhesive composition according to any one of claims 5 to 9 wherein the amount of plasticizer in the composition is up to 100 parts by weight, preferably 5 to 75 parts by weight.

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